wherein said conductive oligomer is also covalently attached to a single stranded nucleic acid; and

b) an AC/DC voltage source electrically connected to said test chamber.

20. (Amended) An apparatus for the detection of target nucleic acids in a test sample, comprising:

a) a test chamber comprising a first and a second measuring electrode, wherein said first measuring electrode comprises a covalently attached single stranded nucleic acid, wherein said nucleic acid further comprises [comprising] a covalently attached second electron transfer moiety; and

b) an AC/DC voltage source electrically connected to said test chamber.

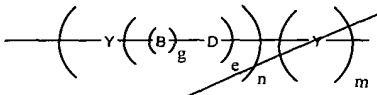
21. (Amended) An apparatus according to claim 19, [or] 20 or 26, further comprising:

d) a processor coupled to said electrodes.

22. (Amended) An apparatus according to claim 19, [or] 20 or 26, wherein said AC voltage source is capable of delivering frequencies from between about 1 Hz to about 100 kHz.

23. (Amended) An apparatus according to claim [22] 20, wherein said single stranded nucleic acids are covalently attached to said first measuring electrode via a spacer.

25. (Amended) An apparatus according to claim 19, [or] 24 or 28, wherein said conductive oligomer has the formula:



wherein

Y is an aromatic group;

n is an integer from 1 to 50;

g is either 1 or zero;

e is an integer from zero to 10; and

m is zero or 1;

wherein when g is 1, B-D comprises two atoms forming a bond able to conjugate with neighboring bonds [is a conjugated bond]; and

wherein when g is zero, e is 1 and D is selected from the group consisting of [preferably] carbonyl[, or] and a heteroatom moiety, wherein the heteroatom is selected from oxygen, sulfur, nitrogen [or] and phosphorus.

Please add the following new claims:

--26. An apparatus for the detection of target nucleic acids in a test sample, comprising:

a) a test chamber comprising a first and a second measuring electrode, wherein said first measuring electrode comprises a covalently attached first single stranded nucleic acid;

b) a second nucleic acid comprising a covalently attached electron transfer moiety; and

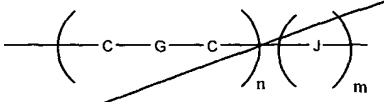
c) an AC/DC voltage source electrically connected to said test chamber.

27. An apparatus according to claim 26 wherein said single stranded nucleic acids are covalently attached to said electrode via a spacer.

28. An apparatus according to claim 27, wherein said spacer is a conductive oligomer.

29. An apparatus according to claim 27, wherein said spacer is an insulator.

30. An apparatus according to claim 19, 24 or 28, wherein said conductive oligomer has the formula:



wherein

C are carbon atoms;

n is an integer from 1 to 50;

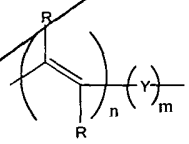
m is 0 or 1;

Sub C5

J is a heteroatom selected from the group consisting of nitrogen, silicon, phosphorus, sulfur, carbonyl and sulfoxide; and

G is a bond selected from single, double and triple bonds.

31. An apparatus according to claim 19, 24 or 28, wherein said conductive oligomer has the formula:



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wherein

n is an integer from 1 to 50;

m is either zero or 1;

Y is an aromatic group; and

R is a substitution group.

32. An apparatus according to claim 19, 20 or 26, wherein said first measuring electrode further comprises a passivation agent monolayer.

Sub C6

33. An apparatus according to claim 32 wherein said passivation agent monolayer comprises conductive oligomers.

34. An apparatus according to claim 32 wherein said passivation agent monolayer comprises insulators.--

REMARKS

The Commissioner is authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-1300 (Our Order No. A-64558-1/RFT/RMS). A duplicate copy of this sheet is enclosed.

Claims 19-34 are pending.

By way of summary, the present invention is directed to compositions and methods

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